CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Mission Incident
Santa Paula, CA
Preliminary Summary of Air Monitoring Results
January 2, 2015

Prepared by
Center for Toxicology and Environmental Health, L.L.C. (CTEH®)

CTEH CENTER FOR TOXICOLOGY AND ENVIRONMENTAL HEALTH, LLC

Introduction

Center for Toxicology and Environmental Health, LLC (CTEH®) continued air monitoring in support of response activities following a vacuum truck explosion and fire in Santa Paula, CA.

This submittal summarizes air monitoring data for January 2, 2015 07:00 to January 3, 2015 07:00.

Real-time Air Monitoring

All instrumentation was calibrated at least once per day or per manufacturer's recommendations. Manually-logged real-time air monitoring was conducted chlorine (Cl_2), hydrogen sulfide (H_2S), percent of the Lower Explosive Limit (LEL), oxygen (O_2), particulate matter (10 micron particles, PM_{10}), sulfur dioxide (SO_2), and volatile organic compounds (VOCs), with instruments such as the RAESystems® MultiRAE Plus and MultiRAE Pro PID with chemical-specific sensors, and TSI® AM510s for particulate matter. Monitoring was conducted by CTEH® personnel in the work area and along the perimeter of the facility. Table 1 summarizes monitoring data for manually-logged real-time readings. Maps including the site location, aerial site photo, and roaming monitoring are included in Appendix A.

CTEH® monitored RAESystems® AreaRAE units with a ProRAE Guardian system at four locations on the fence line of the facility within the work area. An additional unit (Unit 11) was deployed on the fence line of the facility between the 120 barrel tank truck and the road to monitor Cl_2 concentrations. AreaRAE units were equipped with sensors to detect VOCs, LEL, H_2S, SO_2, and Cl_2. Unit 01 recorded one instantaneous H_2S detection of 1.4 ppm at 00:39 on 1/3/2015. Unit 11 recorded three Cl_2 detections of 2.3 ppm at 07:11 on 1/2/2015, 2.7 ppm at 06:35 on 1/3/2015, and 1.1 ppm at 06:40 on 1/3/2015. These detections were instantaneous and not sustained for more than one 15-second instrument polling interval. These detections therefore did not exceed the site-specific action levels. Table 2 summarizes monitoring data for AreaRAE monitoring. AreaRAE graphs displaying real-time air monitoring data as well as 15-minute rolling averages and a map depicting AreaRAE locations are included in Appendix B.

Particulate monitors were collocated with AreaRAE stations 1, 2, 3, and 4 and data-logged to monitor PM_{10}. Table 3 summarizes data-logged particulate monitoring data.

Table 1: Manually-Logged Real-Time Air Monitoring Summary[1]
January 2, 2015 07:00 – January 3, 2015 07:00

Location Category	Analyte	Instrument	No. of Readings	No. of Detections	Avg. of Detections	Detection Range[2]
Work Area	Cl_2	MR+ / MR Pro	13	0	NA	<0.1 ppm
	H_2S	MR+ / MR Pro	9	0	NA	<1 ppm
	LEL	MR+ / MR Pro	22	0	NA	<1 %
	O_2	MR+ / MR Pro	9	9	20.9	20.9 - 20.9 %
	PM_{10}	AM510/Dusttrak	21	21	0.018	0.002 - 0.055 mg/m^3
	SO_2	MR+ / MR Pro	22	0	NA	<0.1 ppm
	VOC	MR+ / MR Pro	22	0	NA	<0.1 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right.*

Table 2: AreaRAE Air Monitoring Summary[1]
January 2, 2015 07:00 – January 3, 2015 07:00

Unit ID	Analyte	No. of Readings	No. of Detections	Avg. of Detections	Detection Range[2]
Unit 01	H_2S	5200	40	0.2 ppm	0.1 - 1.4 ppm
	LEL	5200	0	NA	< 1 %
	SO_2	5200	0	NA	< 0.1 ppm
	VOC	5200	0	NA	< 0.1 ppm
Unit 02	H_2S	5017	87	0.1 ppm	0.1 - 0.2 ppm
	LEL	5017	0	NA	< 1 %
	SO_2	5017	0	NA	< 0.1 ppm
	VOC	5017	241	0.1 ppm	0.1 - 0.2 ppm
Unit 03	H_2S	5217	0	NA	< 1 ppm
	LEL	5217	0	NA	< 1 %
	SO_2	5217	0	NA	< 0.1 ppm
	VOC	5217	38	0.1 ppm	0.1 - 0.1 ppm
Unit 04	H_2S	5226	29	0.1 ppm	0.1 - 0.1 ppm
	LEL	5226	0	NA	< 1 %
	SO_2	5226	0	NA	< 0.1 ppm
	VOC	5226	0	NA	< 0.1 ppm
Unit 11	Cl_2	5139	373	0.2 ppm	0.1 - 2.7 ppm
	SO_2	5139	0	NA	< 0.1 ppm
	VOC	5139	448	0.1 ppm	0.1 - 0.2 ppm

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*
[2]*Maximum detections preceded by the "<" symbol are considered non-detects below reporting limit to the right*

Table 3: AM510 PM_{10} Monitoring Summary[1]
January 2, 2015 07:00 – January 3, 2015 07:00

Serial No.	Location	No. of Readings	No. of Detections	Avg. Detection	Detection Range
10601072	AR01	5281	5281	0.015	0.004 - 0.768 mg/m3
10503020	AR02	5149	5149	0.018	0.005 - 0.173 mg/m3
10704075	AR03	5176	5176	0.022	0.011 - 0.574 mg/m3
10704074	AR04	3256	3256	0.015	0.004 - 0.103 mg/m3

[1]*Note: The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format*

Appendix A

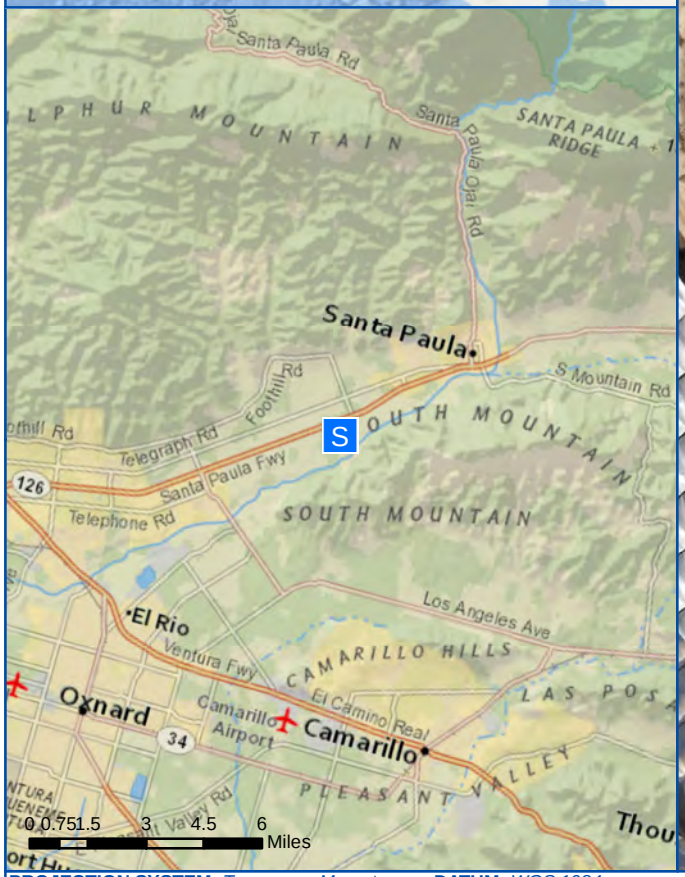
Incident Maps:

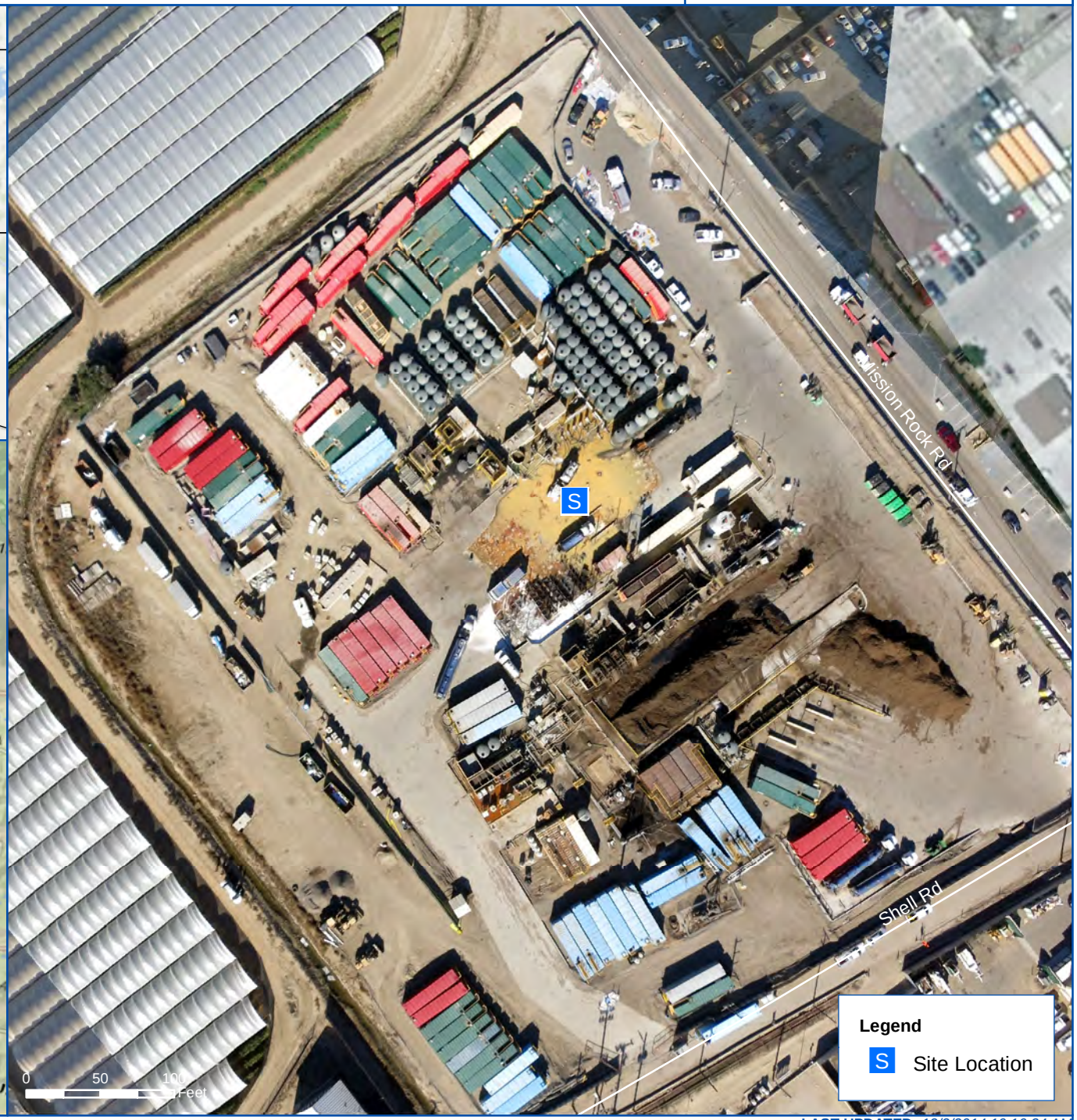
Real-Time Air Monitoring Locations and Incident Site

Site Location

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura





PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *12/2/2014 10:10:34 AM*

Aerial Overview - 1/02/2015

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/2/2015 4:11:21 PM*

Manually Logged Real-Time Air Monitoring Concentrations

Cl_2 - Jan 02, 2015 07:00 to Jan 03, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/3/2015 9:28:08 AM*

Manually Logged Real-Time Air Monitoring Concentrations

H_2S - Jan 02, 2015 07:00 to Jan 03, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/3/2015 7:25:55 AM*

Manually Logged Real-Time Air Monitoring Concentrations

LEL - Jan 02, 2015 07:00 to Jan 03, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/3/2015 7:28:10 AM*

Manually Logged Real-Time Air Monitoring Concentrations

O_2 - Jan 02, 2015 07:00 to Jan 03, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84* **Print Date:** *1/3/2015 7:30:02 AM*

Manually Logged Real-Time Air Monitoring Concentrations

PM_{10} - Jan 02, 2015 07:00 to Jan 03, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/3/2015 7:32:08 AM*

Manually Logged Real-Time Air Monitoring Concentrations

SO_2 - Jan 02, 2015 07:00 to Jan 03, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/3/2015 7:33:53 AM*

Manually Logged Real-Time Air Monitoring Concentrations

VOC - Jan 02, 2015 07:00 to Jan 03, 2015 07:00

CTEH Project#: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

PROJECTION SYSTEM: *UTM13N* **COORDINATE SYSTEM:** *WGS84*

Print Date: *1/3/2015 7:36:27 AM*

Appendix B:

AreaRAE Trend Graphs, AM510 Trend Graphs, and Location Map

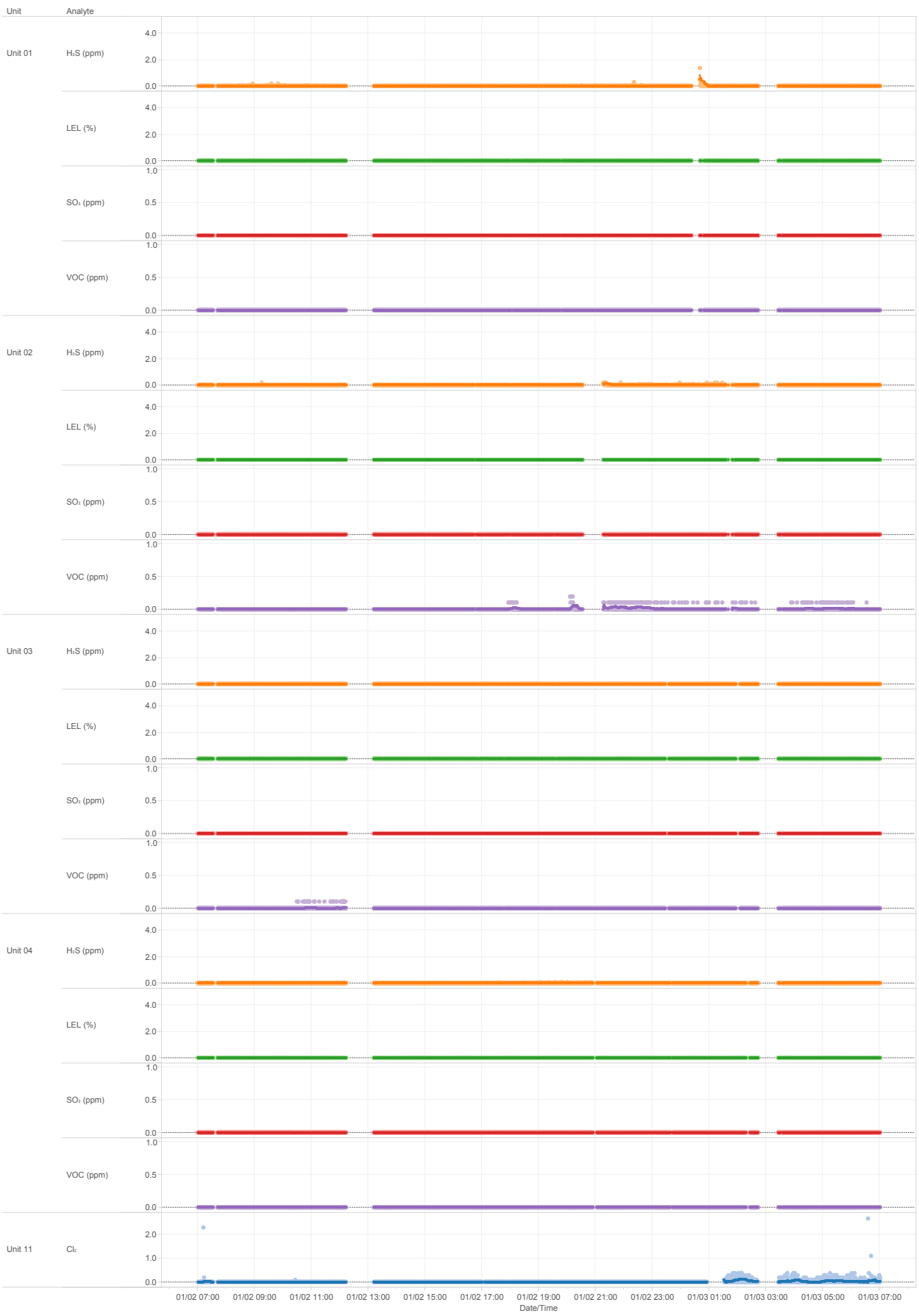
AreaRAE and AM510 Locations

Mission Incident

Project: 106846
Client: Patriot Environmental
City: Santa Paula, CA
County: Ventura

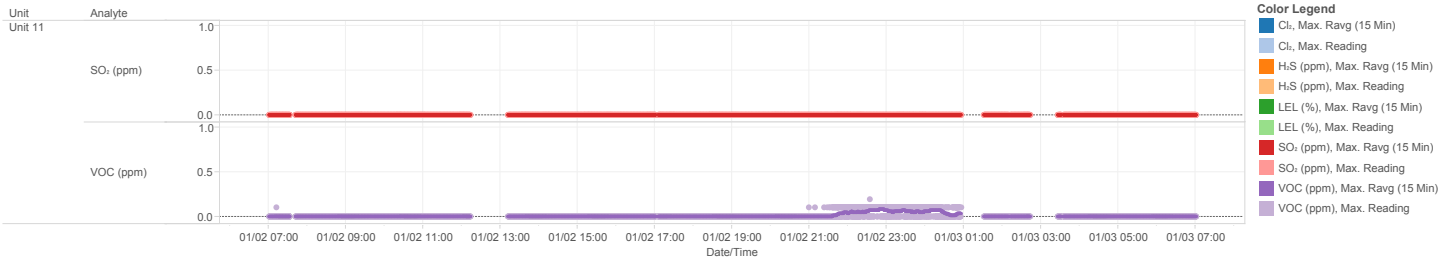
PROJECTION SYSTEM: *Transverse Mercator* **DATUM:** *WGS 1984* **LAST UPDATED:** *1/3/2015 9:26:37 AM*

Patriot Environmental
AreaRAE Trend Graphs
1/02/2015 07:00 - 1/03/2015 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

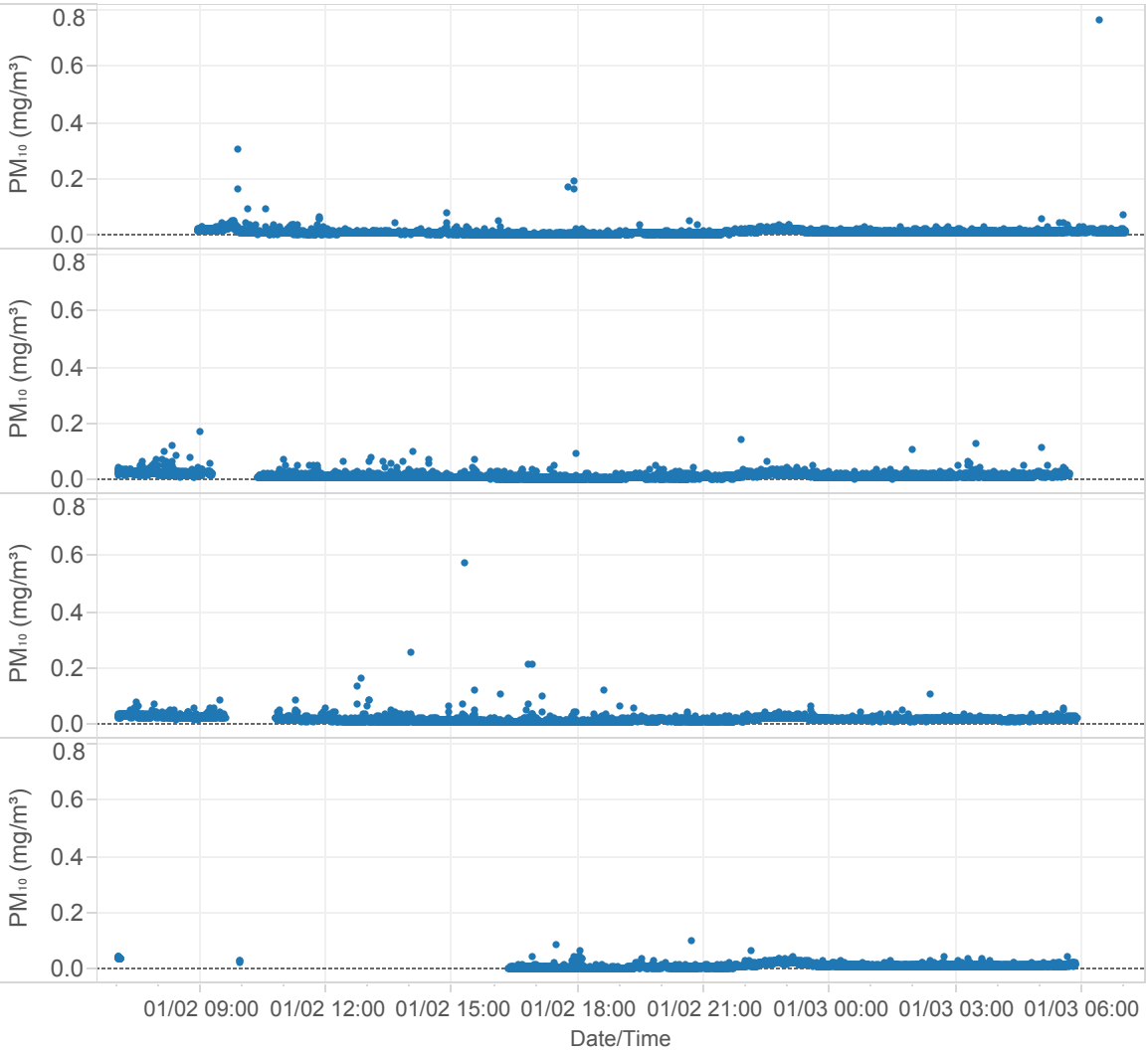
Patriot Environmental
AreaRAE Trend Graphs
1/02/2015 07:00 - 1/03/2015 07:00



- The data set displayed here has not undergone complete QA/QC analysis and is presented in a preliminary format
- AreaRAE data may contain "drift events." Drift is defined as interference in the electrochemical sensor's ability to accurately report the concentration of a chemical in the atmosphere, resulting in "false positives"

Patriot Environmental
MISSION INCIDENT
Datalogged AM510 (PM_{10}) Summary
1/02/2015 07:00 - 1/03/2015 07:00

Location	Serial No.
AR01	10601072
AR02	10503020
AR03	10704075
AR04	10704074



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